Complete Summary

GUIDELINE TITLE

Knee pain or swelling: acute or chronic.

BIBLIOGRAPHIC SOURCE(S)

University of Michigan Health System. Knee pain or swelling: acute or chronic. Ann Arbor (MI): University of Michigan Health System; 2002 Aug [rev. 2004 Oct]. 13 p. [8 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Knee pain or swelling (acute or chronic)

GUIDELINE CATEGORY

Diagnosis
Management
Treatment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Internal Medicine
Orthopedic Surgery
Pediatrics
Rheumatology

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To facilitate a comprehensive, yet efficient evaluation of knee pain
- To recommend appropriate use of knee X-rays and magnetic resonance imaging (MRI)
- To provide optimal treatment of knee pain
- To identify indications for consultation

TARGET POPULATION

Children, adolescents, and adults with knee pain

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis

1. Comprehensive history and physical
2. Laboratory and ancillary tests
    - Blood studies (e.g., complete blood count, sedimentation rate, fungal, tuberculosis, or bacterial cultures)
    - Synovial fluid analysis (e.g., cell count, crystals, fungal, tuberculosis, or bacterial cultures)
    - Arthrocentesis/aspiration
    - X-ray
    - Magnetic resonance imaging (MRI)
    - Vascular studies

Treatment/Management

1. Pain/inflammation control
    - Topical treatment
        - Ice
        - Capsaicin
    - Oral
        - Acetaminophen (Tylenol)
        - Salicylates such as aspirin, salsalate (Disalcid), diflunisal (Dolobid), tri-salicylate (Trilisate)
        - Traditional non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen (Nuprin, Motrin, Advil); indomethacin (Indocin); diclofenac sodium (Voltaren, Voltaren-XR); ketoprofen (Orudis, Oruvail); naproxen (Aleve, Anaprox, Naprosyn, Naprelan)*; nabumetone (Relafen); flurbiprofen (Ansaid); sulindac (Clinoril); etodolac (Lodine); diclofenac potassium (Cataflam); oxaprozin (Daypro); piroxicam (Feldene); meloxicam (Mobic)
        - Cyclooxygenase-2 (COX-2) inhibitors such as valdecoxib (Bextra) and celecoxib (Celebrex)*

        - Combination preparations such as diclofenac sodium & misoprostol (Arthrotec 50 and 75)
        - Alternative medicine such as glucosamine and chondroitin
    - Intraarticular injection
        - Hyaluronic acid (HA) injections such as hyaluronate sodium (Hyalgan) and Hylan GF-20 (Synvisc)
        - Anesthetics
        - Corticosteroids
2. Activity modification
    - Biomechanical assessment
    - Restriction and/or rest
    - Knee padding
    - Extension splints
    - Crutches
3. Therapeutic exercise
    - Quadriceps strengthening
    - Hamstring and calf stretching
    - Knee strengthening
    - Low impact aerobics
4. Referral to specialist

*Note from the National Guideline Clearinghouse (NGC): On September 30, 2004, Vioxx (rofecoxib) was withdrawn from the U.S. and worldwide market due to safety concerns of an increased risk of cardiovascular events. See the U.S. Food and Drug Administration (FDA) Web site for more information.

Subsequently, on December 23, 2004, the FDA issued a public health advisory concerning the use of non-steroidal anti-inflammatory drug products (NSAIDs) including the COX-2 selective agents Celebrex (celecoxib), Bextra (valdecoxib), and a non-selective NSAID, naproxen (sold as Aleve, Naprosyn, and other trade name and generic products). See the FDA Web site for more information.

MAJOR OUTCOMES CONSIDERED

- Utility of diagnostic tests for evaluating knee pain
- Degree of pain relief
- Physical functioning
- Drug interactions and side effects

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The literature search was conducted prospectively using the major keywords of: knee injuries, knee, patellofemoral, patello, anterior cruciate ligament, meniscus, meniscal tear, osteoarthritis, brace(s), immobilizer, immobilization, rehabilitation, x-rays, computed tomography, radiography, magnetic resonance imaging, MRI,

diagnosis, treatment, randomized controlled trial, clinical trials, controlled clinical trial(s), meta-analysis, multicenter studies, comparative study(ies). Articles between 1976 and December 1996 were examined. The search was supplemented with recent clinical trials known to expert members of the panel. Negative trials were specifically sought.

Literature searches on three new topics were used to update the guideline: COX-2 inhibitors (cyclooxygenase inhibitors), hyaluronic acid, and glucosamine/chondroitin sulfates. Publications from July 1996 through available in April 2000 were examined. The following main terms were included in each of the three searches: knee, knee joint, knee medical collateral ligament, knee injuries, patella-injuries, knee-injuries, knee osteoarthritis, osteoarthritis, pain. Searches also included the following terms to identify the type of information provided: guidelines, clinical trials, and costs. (Specific MeSH search terms are available upon request from the guideline developer.) The search was a single cycle.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

A. Randomized controlled trials
B. Controlled trials, no randomization
C. Observational trials
D. Opinion of expert panel

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the National Guideline Clearinghouse (NGC): The following key points summarize the content of the guideline. Refer to the full text of the original guideline document for additional information, including detailed information on dosing, possible side effects, and cost of medications; risk factors; subspecialty referrals.

The levels of evidence (A, B, C, D) are repeated at the end of the Major Recommendations field.

Diagnosis

The majority of knee pain is caused by patellofemoral syndrome and osteoarthritis [evidence: D].

Magnetic resonance imaging (MRI) of the knee has been proven not to be superior to the clinical exam by an experienced examiner in the evaluation of acute knee injuries [A].

Magnetic resonance imaging may be useful to assess bone pathology underlying chronic knee pain [D].

Differentiating between knee pain without constitutional symptoms, knee pain with constitutional symptoms, and traumatic knee pain is helpful in determining a diagnosis (refer to Figures 1, 2, and 3 in the original guideline document for details).

Patients with knee pain and swelling who have non-bloody aspirates may also have serious knee pathology (refer to Figure 4 in original guideline document for details).

Treatment

Exercises are important. Many knee conditions will improve with conservative treatment consisting of low impact activities and exercises to improve muscular strength and flexibility. Patellofemoral dysfunction is best treated with vastus medialis strengthening and hamstring and calf stretching [B].

In most cases a home treatment program should be explained in detail to the patient, including specific guidelines for activity modification and exercises. Initially, formal physical therapy is usually not required.

All patients with mild to moderate knee osteoarthritis who do not have medical contraindications should be offered an exercise program that includes lower extremity strengthening and stretching exercises combined with low impact aerobic exercises (e.g., swimming, biking, walking, cross-country skiing) [A].

The initial drugs of choice for the treatment of the pain of knee osteoarthritis are acetaminophen and/or topical capsaicin [A]. If a traditional non-steroidal anti-inflammatory drug (NSAID) is indicated, the choice should be based on cost (refer to Table 6 in original guideline document for details). Cyclooxygenase-2 (COX-2) inhibitors* are no more effective than traditional non-steroidal anti-inflammatory drug agents; they may offer a short-term but probably no long-term advantage in gastrointestinal (GI) tolerance for some patients. Due to cost and increased heart attack risk, cyclooxygenase-2 inhibitors* should be reserved for carefully selected patients (refer to Table 7 in the original guideline document for details).

Follow-up

Symptoms should not be allowed to persist for more than 12 weeks before a reevaluation of the condition, along with possible consultation with physical therapy or a musculoskeletal specialist (e.g., orthopedic surgeon, rheumatologist, physiatrist, or sports medicine specialist) [D].

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Subsequently, on December 23, 2004, the FDA issued a public health advisory concerning the use of non-steroidal anti-inflammatory drug products (NSAIDs) including the COX-2 selective agents Celebrex (celecoxib), Bextra (valdecoxib), and a non-selective NSAID, naproxen (sold as Aleve, Naprosyn, and other trade name and generic products). See the FDA Web site for more information.

Definitions:

Levels of Evidence

Levels of evidence for the most significant recommendations.

A. Randomized controlled trials
B. Controlled trials, no randomization
C. Observational trials

D. Opinion of expert panel

CLINICAL ALGORITHM(S)

The original guideline contains clinical algorithms for:

- Knee Pain without Constitutional Symptoms
- Knee Pain with Constitutional Symptoms
- Traumatic Knee Pain
- Knee Effusion that is Not Grossly Bloody

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see Major Recommendations).

Conclusions were based on prospective randomized clinical trials if available, to the exclusion of other data; if randomized controlled trials were not available, observational studies were admitted to consideration. If no such data were available for a given link in the problem formulation, expert opinion was used to estimate effect size.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Comprehensive and efficient evaluation of knee pain
- Appropriate use of knee x-rays and magnetic resonance imaging (MRI) in evaluating knee pain
- Optimal treatment of knee pain
- Improved identification of patients in need of specialty consultation or referral

Efficacy of Home Exercise Programs

Home exercise programs are as effective as formal physical therapy for most patients.

Efficacy of Drug Therapies

- Acetaminophen: Acetaminophen as initial drug of choice is based on the similar efficacy of high dose acetaminophen (4000 milligrams per day [mg/day]) compared to traditional NSAIDs and the lower side effect profile.
- Indomethacin: Indomethacin (colchicine if patient is intolerant to NSAIDs) is highly effective in patients with gout or pseudogout.
- Glucosamine and chondroitin: Both appear to be quite safe with few side effects, particularly in comparison to NSAIDs.

Subgroups Most Likely to Benefit:

Patients with Gout

Patients with gout or pseudogout benefit from treatment with indomethacin (or colchicine).

Patients who Cannot use Traditional NSAIDs

Some patients who cannot use traditional NSAIDs can be treated with COX-2 inhibitors* (refer to Table 7 in the original guideline document for details).

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POTENTIAL HARMS

Adverse Treatment Effects

- Non-steroidal anti-inflammatory drugs (NSAIDs) and cyclooxygenase-2 (COX-2) inhibitors*: There is a potential for gastrointestinal side effects, including gastrointestinal bleeding, with both classes of drugs. Analyses of major trials of COX-2 inhibitors* suggests there may be an increase in cardiovascular event rates for patients taking COX-2 inhibitors*.
- Intraarticular injection: Potential side effects include introduction of infection, skin necrosis, tendon and cartilage weakening, and systemic effects of corticosteroids (especially hyperglycemia).
- Hyaluronic acid injection: Adverse effects with intraarticular hyaluronic acid injections occur in about 8% of patients and are limited usually to a mild, self-limiting local reaction.

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CONTRAINDICATIONS

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Patients with Documented Intolerance to Non-steroidal Anti-inflammatory Drugs (NSAIDs)

Traditional NSAIDs are contraindicated in patients with documented intolerance to traditional NSAIDS or risk factors for gastrointestinal bleeding, such as: (1) a history of upper gastrointestinal bleeding, (2) receiving chronic, high dose systemic corticosteroids, or (3) presence of a bleeding disorder.

Patients Allergic to Sulfa

Celecoxib* is contraindicated in sulfa-allergic patients.

Patients at High Risk for Atherosclerotic Disease

Cyclooxygenase-2 (COX-2) inhibitors* should be used with caution in patients at high risk for atherosclerotic disease or high risk of cardiovascular mortality until further studies clarify the potential risks.

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QUALIFYING STATEMENTS

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These guidelines should not be construed as including all proper methods of care or excluding other acceptable methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding any specific clinical procedure or treatment must be made by the physician in light of the circumstances presented by the patient.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Clinical Algorithm

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1997 Nov (revised 2002 Aug; modified 2004 Oct following FDA drug withdrawal)

GUIDELINE DEVELOPER(S)

University of Michigan Health System - Academic Institution

SOURCE(S) OF FUNDING

University of Michigan Health System

GUIDELINE COMMITTEE

Knee Pain Guideline Team

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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Team Members: Jeffrey Desmond, MD; David Fox, MD; Hilary Haftel, MD; Mark McQuillan, MD; Edward Wojtys, MD

Guidelines Oversight Team: Connie Standiford, MD; Lee Green, MD, MPH; Van Harrison, PhD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The University of Michigan Health System endorses the Guidelines of the Association of American Medical Colleges and the Standards of the Accreditation Council for Continuing Medical Education that the individuals who present educational activities disclose significant relationships with commercial companies whose products or services are discussed. Disclosure of a relationship is not intended to suggest bias in the information presented, but is made to provide readers with information that might be of potential importance to their evaluation of the information.

Team Member	Company	Relationship
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GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Knee pain or swelling: acute or chronic. Guidelines for clinical care. Ann Arbor (Michigan): University of Michigan Health System, 1997.

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GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the University of Michigan Health System Web site.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on March 19, 2003. The information was verified by the guideline developer on April 23, 2003.

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